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### **Pro-Poor, Entrepreneur-Based Innovation and it's Role in Rural Development**

**Lina Sonne**



# Pro-Poor, Entrepreneur-Based Innovation and it's Role in Rural Development

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## *Abstract*

*Innovation spurs economic growth and development. Pro-poor innovation in rural areas is more likely to occur through small-scale ventures and entrepreneurs than industrial research and development. Whilst previous rural development policies have focussed on small-holder agriculture, the fact is that most rural poor are landless poor and therefore unlikely to benefit greatly from agriculture-based policies. Instead most poor are entrepreneurs, running micro ventures, often at subsistence levels in both agriculture related and non-farm sectors. Though most rural poor are entrepreneurs out of necessity, a few are opportunity entrepreneurs pursuing a profitable business, innovating and looking to grow. These are the growth focussed entrepreneurs that are likely to have a large indirect effect on the poor by providing employment opportunities as well as improved good and service. This paper discusses the concept of pro-poor entrepreneur-based innovation (PEBI) by reviewing existing literature on rural development, innovation and entrepreneurship.*

**Keywords:** Pro-poor innovation, entrepreneurship, rural development

**JEL Codes:** O18, O31, Q18, R51

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## **1. Introduction**

Innovation is central to economic development. (Edquist, 1997, Freeman, 1987, Hall et al., 2003, Lundvall, 1992, Spielman, 2005).<sup>1</sup> Of particular interest in developing countries is rural innovation since it is in rural areas that most of the poor live (WB, 2008).<sup>2</sup> Whilst previous rural development theory, including innovation-related policy, has focussed on small-holder agriculture, the fact is that most rural poor are landless poor and therefore unlikely to benefit directly from agriculture based policies. Instead pro-poor innovation in rural areas is more likely to occur through small-scale ventures and entrepreneurs than industrial research and development.

Most rural poor are entrepreneurs out of necessity (Lingelbach et al., 2005)<sup>3</sup> and therefore unlikely to have the capacity or willingness to take on risks associated with scaling up to make a real impact on the rural economy. A few, generally those that are relatively less poor, are opportunity entrepreneurs pursuing a profitable business, innovating and a looking to grow. These growth focussed entrepreneurs (Lazonick, 2005) are likely to have a large indirect effect on the poor by providing employment opportunities as well as improved good and service. This paper therefore takes the view that these growth-focussed but socially relevant entrepreneurs that are engaged in pro-poor entrepreneur-based innovation are essential to the continuous development of, and poverty alleviation in, rural areas by creating employment, increasing income and providing improved goods and services.

This paper introduces and discusses the concept of Pro-poor Entrepreneur-Based Innovation (PEBI) as a way to more concretely focus on innovation pertinent to economic development and poverty alleviation. The first part traces rural innovation in the historical literature whilst the second part introduces some relevant entrepreneurship theories and the final section pulls together the disparate theories to discuss the PEBI concept of rural innovation.

## **2. Theories on Rural Innovation and Development**

Rural development has, for most of the time since its inception in the post WWII era, focussed almost exclusively on agriculture and how improvements in agriculture can lead to economic

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<sup>1</sup> Here innovation is defined as the continuous process of upgrading using new knowledge or the new combination of existing knowledge, that is new to the local area (Hall, 2003; Spielman, 2005). The innovation process thus emerges from a system of actors whose interactions, behaviour and patterns of learning are conditioned by institutions (Freeman, 1987; Lundvall, 1992; Edquist, 1997).

<sup>2</sup> As noted in the World Development Report (2008) which is focussed on rural and agricultural development through innovation.

<sup>3</sup> Reynolds, 2004 in Lingelbach & de la Vina, 2005 notes that whilst necessity entrepreneurs enter into entrepreneurship because of external shocks such as unemployment, opportunity entrepreneurs make their own choice to create a venture because of an identified unexplored market niche or business opportunity. The difference between opportunity and necessity entrepreneurs suggest a different set of drivers and incentives. For instance, necessity entrepreneurs may be willing to take less risk compared to opportunity entrepreneurs.

growth, development and reduced levels of poverty. Agriculture, it is believed, contributes to structural development of a country through the supply of labour, capital, foreign exchange, food and market for domestically produced industrial goods (Johnston and Mellor, 1961). As economic growth and development of a country takes off, agriculture declines relative to the industrial sector. This is due to a net flow of resources, including labour, from agriculture to industry (Mellor, 1966). The dual sector model (Lewis, 1955) which favoured large scale industrialised agriculture over subsistence agriculture, was based on the assumption that larger scale farming would reap economies of scale which would increase its productivity and efficiency. Small-scale subsistence farming would have no active role in economic development, rather providing resources for the industrialised sector (Ellis and Biggs, 2001).

However, by the mid 1960s it was clear that little improvement had been made to the living conditions of the poor and in fact South Asia was ravaged by severe food shortages and the old theories had not worked in practice.

### 2.1. Small Farm First & Technology Transfer

A change in agricultural theory was provided by Schultz (1964) who argued that subsistence farmers were already efficiently allocating resources, the small but efficient hypothesis. Instead of considering subsistence farmers as passive providers of labour, and capital, Schultz put them at the centre of the agriculture led process of economic development (Ellis and Biggs, 2001). Small-scale agriculture, he believed, improved production on-farm and spurred the growth of labour intensive, non-farm activities through rural growth linkages (Ellis and Biggs, 2001; Mellor, 1966). Mellor believed in a virtuous cycle where increases in agricultural activity and thus farmer income would be magnified by various linkages with the activities of the non-farm sector (Mellor, 1976; Mellor, 1966). This shift to a “small but efficient” paradigm in the 1960’s called for increased investment in research and development relevant to small-scale agriculture so that farmers could acquire more efficient new technologies together with the skills to use them. Furthermore, in accordance with the Induced Innovation Hypothesis (IIH) the abundant labour would be substituted for scarce land in small-scale farming through ‘induced innovation’. The IIH is based on the American agricultural model of extension and diffusion, and asserts that changes in relative prices of factors of production will spur, or induce, the development and adaptation of new technology in order to economise on the relatively more expensive factors of production (Ahmad, 1966; Hayami and Ruttan, 1970). That the scarcity of factors can induce innovation, resulting in technical change, became a stylised fact. Thus, it became generally accepted that small-scale farmers in developing countries could increase productivity substantially by using existing resources more efficiently through the use of improved technologies and practices that had been transferred from national and international agricultural research organisations (Binswanger, 1978; Hayami and Ruttan, 1971).

Around the same time, new high-yielding varieties (HYV) varieties that increased food production were developed (Binswanger and Ruttan, 1978; Hayami and Ruttan, 1971). By using modified seeds, farmers would be able to drastically increase output quantity and quality (Lipton and Longhurst, 1989). This research originating in international research centres like IRRI,

the Philippines and CIMMYT, Mexico<sup>4</sup>, led to a huge increase in output in selected areas of South Asia (such as the Punjab and Haryana) in the 1960's. It was termed the "Green Revolution", which came to dominate much of the rural development debate over the next couple of decades. Though heavily criticised later on, the Green Revolution and the HYV were credited with seeing off a severe humanitarian crisis of South Asia. This innovation was supplier, or science led, and still today rural and agricultural policy in South Asian countries are often focussed on supply rather than demand led innovation.

A linear model of innovation and diffusion emerged during the Green Revolution whereby the international centres of the Consultative Group for International Agricultural Research (CGIAR) developed generic technologies such as high yielding varieties of seeds. These technologies would subsequently be adapted by the national research system before national extension agencies transferred them to farmers (Biggs, 1990) who were expected to use the new technologies as passive end users. This is a hierarchical model of innovation with a linear one-way flow of information and technology from top to bottom. Roles within the structure are clearly defined and networking and linkages outside of the hierarchical top-down path are limited or non-existent in formal plans (Biggs, 1990). Informal research and farmer participation and innovation by anyone other than the central scientists were of inferior importance to central research (Biggs, 1990). Such transfer of technology (TOT) models rested on the assumption that by the time a new crop or technology reached the extension services it would not need to be further adapted by the farmers (Clark, 2002; Douthwaite, 2002).<sup>5</sup>

Separately, but in parallel with the mainstream small-farm efficiency focussed theories on rural development, an alternative movement called Appropriate Technology emerged, based on Schumacher's *Small Is Beautiful* book (Schumacher, 1973). Schumacher criticised the general neoclassical emphasis on blueprints, mass production and transfer of technology to developing countries, arguing that such an approach did not make economies sustainable. Instead Schumacher created a separate paradigm which stresses the need for technologies to be appropriate for local conditions, to be adapted to current economic and resource conditions and to avoid human displacement or environmental degradation. The paradigm further highlighted production using local resources, for established local needs, as the most effective for of human development. Within this model, technologies and the use thereof are dependent on the habits, attitudes and perceived needs of the users and producers. Schumacher is also known as a critic of economic growth and consumption as a measure for development and well-being (Schumacher, 1973; Society, 2008). The small is beautiful debate did not have a substantial impact on mainstream policy which continued to focus on the TOT model and its emphasis on generic technologies. Recently however, the appropriate technology debate has been re-emerging with, in particular, many actors in the third sector finding Schumacher's ideas appealing and especially microfinance, which emphasises self-employment, finds that it resonates with the reality of today's need for smaller scale, context specific solutions that provide livelihoods for the rural poor. However, Schumacher's school came to emphasise engineering and (small-scale) technological solutions, ignoring the social and policy dimensions

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<sup>4</sup> The International Rice Research Institute (IRRI) in the Philippines and the Wheat and Maize Improvement Centre (CIMMYT) in Mexico.

<sup>5</sup> Farmers were at the time considered conservative and non-experimental



that are crucial since Schumacher's ideas are essentially implying a reorganisation of the economy.

Another alternative school of thought that also emerged in the shadow of the mainstream linear innovation model is indigenous technology knowledge (ITK) and indigenous innovation (Chambers et al., 1989; Richards, 1985). A major contribution with respect to pro-poor rural innovation that emerged from this field is that by Anil Gupta (1997) who developed the concept of grassroots innovation. Its focus is on grassroots, and social innovation that emerges from developing countries' own entrepreneurs, small firms and NGO's, as an internal engine of growth in rural areas.

A final point to note is that 'grassroots innovation' is today often incorrectly paired with the fashionable notion of Bottom of the Pyramid (BOP) innovation, as introduced by Prahalad (2006). However, it should be noted that whilst Prahalad's Bottom of the Pyramid innovation is MNC based, and thus based on transfer of external technologies, Gupta's grassroots innovators are close to the PEBI concept developed in this thesis. In a sense the notion of "grassroots innovation" developed by Anil Gupta can be considered as the endogenous, intrinsic version of Prahalad's external, top down version of BOP innovation (Fu et al., 2010). This thesis does not focus, or build, on Prahalad's ideas.

## 2.2. From Top-Down to Bottom-Up & Participatory Models

Despite the continuous domination of the small-farm first paradigm, rural development scholars began to heavily criticise the TOT model for portraying farmers simply as passive technology adopters (Biggs and Clay, 1981) and for considering only exogenous technological change<sup>6</sup> (and not endogenous).<sup>7</sup> In fact, evidence suggested that farmers are natural experimenters and participate in the innovation process by reworking generic technologies to suit their specific needs (Biggs and Clay, 1981). It follows that farmers are actively involved in the innovation process and by implication, innovation emerges from diverse sources. Biggs constructs a multiple source model where innovation has many different sources including farmers, local researchers, extension agencies, NGO's, the private sector and R&D centres (Biggs, 1990). In addition, Biggs (Biggs, 1990) highlights the importance of institutions. Other criticism of the TOT model focused on how the model lets scientists set research priorities and the fact that it operates in a manner that inherently resists change. The TOT model was arranged in a manner which underrates farmer knowledge and the fact that farmers are heterogeneous, risk prone, face a complex set of issues and continuously experiment, innovate and adapt according to historical and empirical evidence (Biggs, 1990; Chambers et al., 1989).

Without challenging the centrality of the farmer-first approach established by Shultz, the continuous criticism resulted in a paradigm shift taking place in rural development thinking from the top-down research and intervention approach that transferred generic technologies to

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<sup>6</sup> Exogenous technology in this case being the technology transferred from international and national researcher centres

<sup>7</sup> The developments in rural innovation and technical change from a linear, to a participatory and finally systemic approach mirrored the move from the linear model of innovation (Schumpeter, 1939) through the chain-link model (Kline and Rosenberg, 1986, to today's systemic perspectives (Freeman, 1987; Lundvall, 1992; Nelson, 1993)

farmers, to a bottom-up approach where farmers were not merely end-users but participating in the innovation process. The change in tack was most clearly noticeable in the various participatory approaches to agricultural development that appeared.<sup>8</sup> What these methods had in common was an effort to improve the suitability of technologies by involving farmers more directly in the R&D process (Mosse et al., 1998). At a practical level on the ground, the actual participation varied widely between projects, managers and agencies resulting in equally varied results. These methods were often too context dependent as the success of a particular approach appeared more dependent on specific local history and institutions than the actual methods themselves, or the theoretical model behind it (Biggs and Smith, 1998). As a result, the transfer and diffusion of participatory research methods was not more successful than the leaner technology transfer model of innovation. Participatory models were also criticised for being a mere label put on a wide range of activities with no clear conceptual foundation (Biggs and Smith, 1998).

Notable among research models emphasising increased grass-root participation is Farming System Research (FSR). This model introduced a systems perspective to agricultural research with the aim to improve its relevance to farmers (Chambers et al., 1989; Norman, 1989; Norman and Collinson, 1986). It uses a holistic, participatory and interdisciplinary approach (FAO, 2001). Influenced by Farming System Research, the important Farmer First model of Chambers (1989) emphasises the ability of farmers to learn, adapt, analyse and improve on their own *with* the help of outsiders rather than *by* outsiders. Farmer First is a set of principles that should be adapted to specific local needs, with a decentralised research model (Chambers et al., 1989:182-183). As the 1990s approached, these models emphasising both participation of end-users and the need to look at issues from a systems perspective, recognising that innovation stem from several sources, began to significantly influence rural development thinking. A further result of the shift to bottom-up development and participatory methods was the advent and rise of non-governmental organisations (NGO) as agents for rural development (Ellis and Biggs, 2001). NGOs were steadily taking on more responsibility on the ground and as well as gaining importance in the debate on rural development and appropriate interventions.

### 2.3. A Shift to Systemic and Livelihood Perspectives

Farming System Research evolved in two directions relevant for this thesis. Firstly, research continued taking on a sectoral systems dimension of farming systems research resulting in Agricultural Knowledge and Information Systems (AKIS) and later agricultural innovation systems (AIS). Secondly, farming systems research began moving towards an integrated on and off-farm view of rural activities, resulting in the (Rural) Sustainable Livelihoods (SL) field. The off-farm activities of rural livelihoods took on more significance, especially through Rural Non Farm Sector (RNFS) research.

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<sup>8</sup> Including, among others, Participatory Technology Development (PTD), On-Farm Research (OFR), Participatory Action Research (PAR), Participatory Rural Appraisal (PRA) and various extension approaches.

### 2.3.1. Systems and Innovation

In a response to the shortcomings of earlier participatory models, authors like R  ling (1986; 1988) and Biggs (1990) began to consider systemic approaches to agricultural development by analysing the importance and nature of institutions for innovation and the relationships between innovation and the institutional environment in which it takes place. This set of scholars argued that without supporting the institutional environment, participatory approaches will fail. One early systemic model is the Agricultural Knowledge and Information Systems (AKIS) which incorporates ideas from the study of knowledge economics, highlighting in particular the generation and diffusion of information and linkages (R  ling, 1986; R  ling and Engel, 1992). AKIS emphasises that knowledge processes are social, as actors seek to influence the process and each other through interaction. Therefore, knowledge and sharing thereof is intricately linked with communication and information (Engel and Salomon, 1997). AKIS has been criticised for not taking into account the historical and cultural contexts in which the innovation process takes place as well as for lacking in understanding of the different kinds of actors involved (Engel and Salomon, 1997; Hall and et al., 2001).

Engel (1997) went on to develop a methodology based on AKIS called Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) as a tool for considering the social organisation of innovation and capacity building.

The most recent development in this area has been to conceptualise rural innovation within the framework of Innovation Systems theory. Drawing on the Schumpeterian perspective of innovation and technological change through creative destruction (Schumpeter, 1934) as well as evolutionary economics and systems theories, an innovation systems framework was constructed (Dosi et al., 1988; Freeman, 1987; Metcalfe, 1988; Nelson, 1993; Nelson and Winter, 1982). The Innovation Systems scholars would study National System of Innovation (NSI) (Freeman, 1987; Lundvall, 1992; Nelson, 1993) to understand how the difference in national set-up impacts on innovation.<sup>9</sup> Within this NSI, innovation is a continuous process where institutions (habits and practices), learning and networks play a central role in generating innovation and technological change (Edquist, 1997; Freeman, 1987; Kline and Rosenberg, 1986; Lundvall, 1992). Subsequently these ideas of a systems perspective of innovation and technological change have been applied to developing countries (OECD, 1997).<sup>10</sup>

The Agricultural Innovation System (AIS) concept (Clark, 2002; Hall et al., 2003; Hall and et al., 2001; Hall et al., 1998; Hall et al., 2004) builds on the NSI to focus specifically on the

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<sup>9</sup> The unit of study was originally at the national level (Freeman, 1987; Lundvall, 1992; Nelson, 1993; OECD, 1997) but also includes regional (Cooke, 2001), sectoral (Malerba, 2002) and technological (Carlsson et al. 2002) systems.

<sup>10</sup> In developing countries, scholars pursued mainly empirical work on innovation which has been summed up by Derayangala, 2006 and include: Technologies are not easily transferable and technological knowledge is often tacit, with institutions and internal capability playing a huge role (Oyelaran-Oyeyinka, 2003; Mytelka, 1999). A lot of technological change takes place below international innovation frontier in developing countries and considerable adaption and modification of technologies and innovation occurs (Bell & Pavitt, 1992; Katz, 1987; Lall, 1987). Such technological activity is the outcome of a variety of factors including the ability to learn and obtain relevant knowledge, skills and the capability to use these (Bell 1984; Bell & Pavitt 1992; Lall, 2000).

need for innovation induced development in agriculture from a systems perspective, emphasising political, social and economic dimensions of knowledge creation and innovation (Hall et al., 2003). It broadens the analysis of what creates innovation from a top down linear model to a complex system where agents and their interactions are influenced by institutions and this has an important influence on the innovation process. Studies on AIS in rural areas in India (Clark et al., 2003; Hall et al., 2004) suggest that the roles of actors and their relationships evolve over time. It follows that the system requires enough flexibility to evolve with the changing requirements and needs of these new networks and partnerships. Within partnerships and networks, individuals rather than organizations often play a vital role. Furthermore, partnerships grow out of shared values and trust which have built up during a long time, rather than from official agreements and negotiations. Personal and professional networks are therefore important. Such partnerships should be made up of actors with different knowledge and capabilities so that each can provide something new to others within the network. Critical reflection and learning are important so that actors can adjust to new challenges or improve the way they are dealing with existing ones as new knowledge and learning becomes available.

AIS as a framework for rural pro-poor innovation does, however, suffer two shortcomings from the point of view of the current study. Firstly, it is focused exclusively on the agriculture sector. However, it has long been recognised that the rural non farm sector (RNFS) is a vital part of the rural economy it is expected that most of the poverty alleviating developments are to come from this rather than the agriculture sector (Start, 2001). Secondly, AIS is not explicitly focussed on direct solutions, such as goods, services or income, for the rural poor. Nor does it focus on whether an innovation, or a set-up of an innovation system, is welfare enhancing for poor rural as (Spielman, 2005) notes:

“few studies in the emerging literature on innovation systems in developing-country agriculture ask the fundamental question: whether a given innovation is welfare increasing. This means asking whether an innovation increases efficiency in production or utilisation of knowledge directly relevant to those goods and services used by the poor..., or whether an innovation improves the distribution or social surplus in a manner beneficial to the poor”. ..“Ultimately, by putting innovation (rather than poverty) at the centre of its study of developing-country agriculture, the innovation systems framework is limiting its relevance and value to developing-country agriculture” (Spielman, 2005:41-42).

Rather, (Berdegue, 2005) proposes a pro-poor innovation systems as

“a multi-stakeholder social learning process, that generates and puts to use new knowledge and which expands the capabilities and opportunities of the poor” (Berdegue, 2005:9).

This is a natural extension of the AIS, with a clearer focus on the rural poor.

With these shortfalls in mind, the next section goes on to widen the understanding of pro-poor rural occupational activities by using a broader Sustainable Rural Livelihoods perspective instead.

### 2.3.2. Rural Sustainable Livelihoods and the Rural Non-Farm Sector

Whilst not focussing on innovation, the sustainable livelihood (SL) approach does have several principles in common with innovation systems models, including the emphasis on multi-level targeting, partnerships to roll out interventions and the dynamic nature of rural livelihoods. In addition, SL takes a people-centred approach that focuses on participation and responsiveness of end-users whilst emphasising economic, institutional, social and environmental sustainability (Carney, 1998). SL defines 'livelihood' as the capabilities, assets and activities required to make a living (Chambers and Conway, 1992) and puts the household at the centre of the analysis of how to empower the poor (Ellis and Biggs, 2001). SL consists of a range of farm and non-farm activities which together provide a variety of income strategies (Chambers et al., 1989). This approach thus brings together earlier theories on farming system research (Chambers, 1983; Chambers et al., 1989) with the food security and famine analysis school (Sen, 1981) as well as participatory approaches and poverty alleviation (Haug, 1999).

Furthermore, The SL approach does not exclusively focus on farming activities but crucially includes those of the rural non-farm sector (RNFS)<sup>11</sup>, that make up the total activities of rural household (Ellis and Biggs, 2001). The RNFS, which

“includes all economic activities in rural areas except agriculture, livestock, fishing and hunting” (Lanjouw and Lanjouw, 2000:3),

is important because it has the potential to absorb rural surplus labour and help diversify risks and employment opportunities within households (Davis and Bezemer, 2004). In fact, opportunities for growth and employment creation are most likely among the SME's of rural towns (Start, 2001:501). The RNFS is characterised by great heterogeneity and varying degrees of production which are greatly influenced by the access to capital, inequality, poverty education, caste, ethnicity, gender, infrastructure and access to markets (Lanjouw and Lanjouw, 2000; Davis, 2004).

Whilst the innovation system approaches focus on innovation, but tend to still be agriculture and in particular small-farm focussed, the rural sustainable livelihood approach emphasises a holistic view of the rural sector including the RNSF, but does not focus on innovation. The two approaches are important and ideas from both will be used in this thesis. The RNFS literature has noted that poverty alleviation and growth is likely to occur in the RNFS through entrepreneurs and small firms. However, neither innovation systems nor sustainable livelihood approaches focus on the entrepreneur or entrepreneurship as an avenue to empower the rural poor or as the focus of rural innovation. Whilst innovation system theories put a focus on innovation at the firm (or in the case of AIS, agriculture-related innovation), sustainable livelihoods emphasised the household. The work on the RNFS too failed to explicitly focus on the importance of entrepreneurs and entrepreneurship. The next section therefore, introduces entrepreneurship literature to widen the understanding of entrepreneurship related concepts pertaining to rural pro-poor innovation.

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<sup>11</sup> Defined as all non-agricultural activities generating income. It was viewed as a low productivity sector producing inferior goods expected to further shrink as a country develops (Davis, 2004; Lanjouw & Lanjouw, 2000)

### ***3. Theories on Entrepreneurship & the Entrepreneur***

Whilst previous rural development policies have focussed on small-holder agriculture, the fact is that most rural poor are landless poor and therefore unlikely to benefit greatly from agriculture based policies. Instead many poor are entrepreneurs, running micro ventures, often at subsistence levels in both agriculture related and non-farm sectors. Since a large number of rural poor operate as entrepreneurs, many of the socially relevant innovation originate from entrepreneurs, whether in a commercial, financial or NGO sector. Businesses run by the poor normally operate at a very small scale with very few assets or machinery (Banerjee et al., 2006). Banerjee and Duflo in a study on the economic lives of the poor comment that

“all over the world a substantial fraction of the poor act as entrepreneurs in the sense of raising the capital, carrying out the investment, and being the full residual claimants for the earnings” (Banerjee et al., 2006:10).

#### ***3.1. The Classical Entrepreneur***

Entrepreneurship shares with innovation systems theory both a common origin, in the work of Schumpeter<sup>12</sup> (Schumpeter, 1944; Schumpeter, 1934; Schumpeter and Opie, 1961), and a lack of definitive clarity on underlying terms and characteristics. Schumpeter’s early work saw the entrepreneur as an individual disrupting existing equilibrium by creating new combinations of existing resources through the process of innovation. Schumpeter later suggested that it was not the lone entrepreneur that was the innovator but the firm (Schumpeter 1943, 1950 in Lazonick, 2008) where the entrepreneur instead acts as the leader of an evolving business.

Recent definitions of entrepreneurship in the same vein include Wennekers and Thurik (1999), who explain that

“entrepreneurship is the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organisations to: perceive and create new economic opportunities (new products, new production methods, new organisational schemes and new product-market combinations) and to introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions” (Wennekers and Thurik, 1999:47).

The entrepreneur is then

“somebody who specialises in taking responsibility for making judgmental decisions that affect the locations, forms and the use of goods, resources, or institutions” (Herbert and Link, 1989:31).

Put differently, the entrepreneur is an agent in the economy catalyzing change and economic growth (Wennekers and Thurik, 1999). The main factor that links entrepreneurship to

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<sup>12</sup> Non-Schumpeterian schools on entrepreneurship include the neo-classical school, represented by Marshall and Knight, which sees the role of the entrepreneur as that of leading the market to equilibrium through their activities. Meanwhile, the Austrian tradition under Kirzner, focussed on the entrepreneur’s ability to perceive new and untapped opportunities and bring together resources to meet such needs or gaps (Kizner, 1985; Marshall, 1961). Thus, entrepreneurship can mean both the creation of new opportunities and the response to exiting challenges, where the entrepreneur is prepared to face risks uncertainty” (Henrekson, 2007: 720).

economic growth is 'newness' through new business start-up, innovation and competition. Using evolutionary theory, the authors emphasise the importance of innovation and the transformation of information into knowledge, where technical change is the driving force in the economy, supported by underlying institutions (Wennekers and Thurik, 1999:43-44).

### 3.2. Entrepreneurship in Developing Countries

There is a clear entrepreneurial divide between the west and developing countries. Most entrepreneurs in developed countries are opportunity entrepreneurs, reflecting many of the traits of the classic entrepreneur noted above, as exemplified by the success of Silicon Valley. In developing countries, however, whilst most entrepreneurs are so out of necessity<sup>13</sup>, those that hold the greatest promise for economic growth, development and increased employment are the far fewer entrepreneurs that act upon perceived opportunities. The difference between opportunity and necessity entrepreneurs suggests a different set of drivers and incentives.<sup>14</sup> For instance, necessity entrepreneurs may be willing to take less risk compared to opportunity entrepreneurs.<sup>15</sup> Naudé (2008) translates this into an apparent lack of interest in seeking out entrepreneurial opportunities by the poor, although states that this would be because

“assuming the high risk of trying to exploit opportunities which are subject to uncertainty may be unacceptable as the potential losses may outweigh the potential gains. Thus manager-owners, family businesses and household enterprises often experience difficulty in innovation and adopting new technology” (Naudé, 2008:6).

Furthermore, high entry costs due to corruption, regulations and bureaucracy makes it more burdensome to set up a business. The opportunity entrepreneurs however, are more likely to be better prepared for undertaking a business opportunity as well as better able to take risks. They look to grow, to be growth entrepreneurs in other words. Since entrepreneurship flourishes the most in small businesses with growth and innovation potential (UNDP, 2004), growth oriented entrepreneurs are of particular importance in developing countries. These growth oriented entrepreneurs differ from those in developed countries due to the differences in market inefficiencies (Lingelbach et al., 2005). For instance, the challenge for new firms in developing countries is rather than providing 'new to the world' innovation, to climb the value added ladder in order to further increase economic development (Lazonick, 2008:5).

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<sup>13</sup> Reynolds, 2004 in Lingelbach & de la Vina, 2005: whilst necessity entrepreneurs enter into entrepreneurship because of external shocks such as unemployment, opportunity entrepreneurs make a choice to create a venture because of an identified unexplored market niche or business opportunity. See Banerjee & Duflo, 2007 on the poor as entrepreneurs.

<sup>14</sup> It also suggests different financing and support needs. Whilst necessity entrepreneurs are recipients of micro credit or micro finance, which is often not sustainable or leads to growth in business and income opportunities in the long term, opportunity entrepreneurs require capital beyond what these organisations can offer.

<sup>15</sup> Furthermore, the productivity of entrepreneurs in a country varies more than the actual amount of entrepreneurs across countries, because there is an important distinction to be made between the allocation of productive activities which result in innovation and economic growth and unproductive activities such as rent seeking and crime that engage in tax evasion and slows down or eradicate competition (Baumol, 1990).

Those that are opportunity entrepreneurs pursue a profitable business, innovate and look to grow. These growth focussed entrepreneurs (Lazonick, 2005) are likely to have a large indirect effect on the poor by providing employment opportunities as well as improved goods and service. Therefore pro-poor entrepreneur-based innovation (PEBI) is essential to the continuous development of, and poverty alleviation in, rural areas by creating employment, increasing income and providing improved goods and services.

#### ***4. Discussion: Pro-Poor Entrepreneur-Based Innovation***

What the preceding review arrives at is an emphasis on innovation through entrepreneurship which in some way is beneficial to the poor, in other words pro-poor entrepreneur-based innovation (or PEBI). It implies an adjusted view of rural development which moves away from small-holder agriculture and farms as the main beneficiaries of anti-poverty fighting measures and towards a recognition that many poor are not farmers and do not even necessarily wish to be micro-entrepreneurs (as most have to be, whilst operating at subsistence level).

Furthermore, the view that the entrepreneurs with most potential for poverty alleviation are those entrepreneurs who innovate, who look to grow and actually seek out new opportunities would question prevalent ideas which focus either on supporting innovation in manufacturing or supporting entrepreneurs at the micro scale through, for instance microfinance. Rather, this paper argues that it is the slightly larger entrepreneurs and firms, and their innovative activities that need to be supported. This goes beyond focusing on micro credit and microfinance, or, at the other extreme industrialisation in manufacturing, to argue for an increased focus on the gap that lies between these two concepts.

Finally, this pro-poor entrepreneur-based innovation moves beyond the common focus on agriculture support to instead look at the broader rural idea of entrepreneur-based innovation. By putting the entrepreneur at the centre, it avoids dividing innovative activities into agriculture and non-agriculture based opportunities.

There is some proof among the major international institutions and agencies that the focus on small-sale but growth and opportunity focussed entrepreneurs, and their innovative activities is catching on. For instance UNDP is working on 'growing inclusive markets'<sup>16</sup> which focuses on pro-poor innovation in rural areas. The World Bank sponsored infoDEV<sup>17</sup> outfit operates as an incubator and think tank on innovative entrepreneurs with a focus on ICT, including both urban and rural area. Finally, Ashoka<sup>18</sup>, a worldwide and well recognised NGO focuses on supporting innovative pro-poor, or social, entrepreneurs across developing countries.

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<sup>16</sup> <http://www.growinginclusivemarkets.org>

<sup>17</sup> <http://www.infodev.org>

<sup>18</sup> <http://www.ashoka.org>



## **5. Concluding Remarks**

This literature review has discussed the concept of pro-poor entrepreneur-based innovation and argued that such entrepreneur-based innovative activities are essential for to the continuous development of, and poverty alleviation in, rural areas, by creating employment opportunities, and improved goods and services.

The first section found that historically, rural innovation has been equated with agricultural innovation. This was particularly the case during the Green Revolution and its associated technology transfer programmes. Such supply-led theories were later criticised for focusing only on exogenous technical change in a linear manner, leaving farmers as passive end-users. Instead there was a shift to participatory approaches and theory using systemic and holistic views. Two strands are relevant here: systems theory which viewed agricultural innovation as part of a complex system, and sustainable rural livelihoods theory which went beyond agriculture to recognise activities both on and off the farm.

Whilst agricultural innovation theories centre around agriculture and the livelihood approach on the rural household, this paper posits that rural entrepreneurs and small firms are vital to innovation and development so entrepreneurship theories have been incorporated. The entrepreneurship literature makes a distinction between necessity and opportunity entrepreneurs noting that opportunity entrepreneurs are more likely to be active in the innovation process. It was noted that explicitly putting innovation at the centre and seeing development and innovation as a systems phenomena is a relatively recent development.

Finally, the paper argued that a different approach to rural development is needed which shifts focus away agricultural small-holders on the one hand and industrialisation on the other, to instead emphasise rural innovative entrepreneurs, whether agriculture or non-farm focussed.

As regards future research, there is a need to change the support mechanisms in place to better suit opportunity entrepreneurs. This includes financial and non-financial support structures as well as government policy, something that future research and policy debates need to explore.

## References

- Ahmad, S (1966) On the theory of induced invention. *Economic Journal* 76: 344-357
- Banerjee, AV, Duflo, E and Centre for Economic Policy Research (Great Britain) (2006) *The economic lives of the poor*. London: Centre for Economic Policy Research
- Bank, W (1999) World Development Report 1998-1999: Knowledge for Development. World Bank
- Bank, W (2006) *Enhancing Agricultural Innovation: How to Go Beyond the Strengthening of Research Systems?* Washington: World Bank
- Berdegue, JA (2005) Pro-poor innovation systems: Background paper. Rome: International Fund for Agriculture and Development: <http://www.ifad.org/events/gc/29/panel/e/julio.pdf>
- Biggs, S and Smith, G (1998) Beyond Methodologies: Coalition-Building for Participatory Technology Development. *World Development* 26: 239-248
- Biggs, SD (1990) A Multiple Source of Innovation Model of Agricultural Research and Technology Promotion. *World Development* 18: 1481-1499
- Biggs, SD and Clay, EJ (1981) Sources of Innovation in Agricultural Technology. *World Development* 9: 321-336
- Binswanger, HP (1978) The microeconomics of induced technical change. In Binswanger, HP and Ruttan, VW (eds) *Induced Innovation: Technology, Institutions, and Development*. Baltimore: Johns Hopkins University Press
- Binswanger, HP and Ruttan, VW (1978) *Induced Innovation: Technology, Institutions, and Development*. Baltimore: Johns Hopkins University Press
- Carlsson, B and et al. (2002) Innovation Systems: Analytical and Methodological Issues. *Research Policy* 31: 233-245
- Chambers, R (1983) *Rural Development: Putting the Last First*. Harlow: Longman
- Chambers, R and Conway, G (1992) Sustainable rural livelihoods: practical concepts for the 21st century. Brighton: Institute of Development Studies
- Chambers, R, Pacey, A and Thrupp, LA (1989) *Farmer first : farmer innovation and agricultural research*. London: Intermediate Technology Publications
- Clark, N (2002) Innovation Systems, Institutional Change and the New Knowledge Market: Implications for Third World Agricultural Development. *Economics of Innovation and New Technology* 11: 353-368
- Clark, N, Hall, A, Sulaiman, R and Naik, G (2003) Research as Capacity Building: The Case of an NGO Facilitated Post-harvest Innovation System for the Himalayan Hills. *World Development* 31: 1845-1863
- Davis, J (2004) Using the Rural Economic and Enterprise Development (REED) framework for analysis and joint action: implications for spatial development *International Conference on Local Development*. Washington: Natural Resource Institute
- Davis, JR and Bezemer, D (2004) The Development of the Rural Non-Farm Economy in Developing Countries and Transition Economies: Key Emerging and Conceptual Issues. Chatham, UK: Natural Resources Institute
- Dosi, G, Freeman, C, Nelson, RR, Silverberg, G and Soete, L (1988) *Technical Change and Economic Theory*. London: Pinter

- Douthwaite, MB (2002) *Enabling innovation : a practical guide to understanding and fostering technological change*. London: Zed Books
- Edquist, C (1997) *Systems of innovation : technologies, institutions and organizations*. London: Pinter
- Ellis, F and Biggs, S (2001) Evolving Themes in Rural Development 1950s-2000s. *Development Policy Review* 19: 437-448
- Engel, P and Salomon, ML (1997) *Facilitating innovation for development: A RAAKS resource box*. Amsterdam: KIT Publishers
- FAO (2001) *Farming Systems and Poverty: Improving Farmers' livelihoods in a changing World*. Rome: Food and Agriculture organization of the United Nations
- Freeman, C (1987) *Technology policy and economic performance : lessons from Japan*. London ; New York: Pinter Publishers
- Hall, A, Clark, N, Sulaiman, R, Sivamohan, MVK and Yoganand, B (2003) From Measuring Impact to learning Institutional lessons: an innovation systems perspective on improving the management of international agricultural research. *Agricultural Systems* 78: 213-241
- Hall, A and et al. (2001) Why Research Partnerships Really Matter: Innovation Theory, Institutional Arrangements and Implications for Developing New Technology for the Poor. *World Development* 29: 783-797
- Hall, A, Sivamohan, MVK, Clark, NG, Taylor, S and Bockett, G (1998) Institutional developments in Indian agricultural research systems: Emerging patterns of public and private sector activities. *Science, Technology and Development* 16: 51-76
- Hall, A, Yoganand, B, Sulaiman, RV, Raina, RS, Prasad, CS, Naik, GC and Clark, NG (2004) *Innovations in Innovation: Reflections on Partnership, Institutions and Learning*. New Delhi and Andhra Pradesh: CPHP/ICRISAT/NCAP
- Haug, R (1999) From Integrated Rural Development to Sustainable Livelihoods: What Is the Role of Food and Agriculture? *Forum for Development Studies*: 181-201
- Hayami, Y and Ruttan, VW (1970) Factor Prices and Technical Change in Agricultural Development: The United States and Japan, 1880-1960. *The Journal of Political Economy* 78: 1115-1141
- Hayami, Y and Ruttan, VW (1971) *Agricultural Development: An International Perspective*. Baltimore: The Johns Hopkins Press
- Herbert, RF and Link, AN (1989) In Search of the Meaning of Entrepreneurship. *Small Business Economics*: 39-49
- Johnston, BF and Mellor, JW (1961) The role of agriculture in economic development. *American Economic Review* 51: 566-593
- Juma, C and Yee-Cheong, L (2005) *Innovation: Applying Knowledge in Development*. London: Task Force on Science, Technology and Innovation, UN Millennium Project
- Kline, S and Rosenberg, N (1986) An overview of innovation. In Landau, R and Rosenberg, N (eds) *The positive sum strategy*. (pp 275-305). Washington, D.C: National Academy Press
- Lanjouw, JO and Lanjouw, P (2000) The Rural Non-farm Sector: Issues and Evidence from Developing Countries. *Agricultural Economics* 26: 1-23
- Lazonick, W (2005) The Innovative Firm. In Fagerberg, J, Mowery, DC and Nelson, RR (eds) *The Oxford handbook of innovation*. (pp 29-55). Oxford and New York:

Oxford University Press

Lazonick, W (2008) *Entrepreneurial Ventures and the Developmental State: Lessons from the Advanced Economies. UNU-WIDER Discussion Paper*. Helsinki: UNU-WIDER

Lewis, WA (1955) *The theory of economic growth*. London: George Allen & Unwin

Lingelbach, DC, De La Vina, L and Asel, P (2005) *What's Distinctive about Growth-Oriented Entrepreneurship in Developing Countries? Center for Global Entrepreneurship Working Paper* San Antonio, Texas: UTSA College of Business

Livelihoods.org (2009) [www.livelihoods.org](http://www.livelihoods.org).

Lundvall, B-ê (1992) *National Systems of Innovation : Towards a Theory of Innovation and Interactive Learning*. Pinter Publr,

Malerba, F (2002) Sectoral Systems of Innovation and Production. *Research Policy* 31: 247-264

Mellor, JW (1966) *The economics of agricultural development*. Ithaca: Cornell University Press

Mellor, JW (1976) *The new economics of growth : a strategy for India and the developing world*. Ithaca: Cornell University Press

Metcalf, JS (1988) The diffusion of innovations: an interpretive study. In G. Dosi, C, Freeman, Nelson, R, Silverberg, G and Soete, L (eds) *Technical Change and Economic Theory*. London: Pinter

Mosse, D, Farrington, J and Rew, A (1998) *Development as process : concepts and methods for working with complexity*. London: Routledge

Naudé, W (2008) *Entrepreneurship in Economic Development. WIDER Research Paper*. Helsinki: UNU-WIDER

Nelson, RR (1993) *National innovation systems : a comparative analysis*. New York ; Oxford: Oxford University Press

Nelson, RR and Winter, SG (1982) *An evolutionary theory of economic change*. Cambridge, Mass ; London: Belknap Press of Harvard University Press

OECD, OfECaD (1997) *National Innovation Systems*. Paris: OECD

Röling, N (1986) Extension science: increasingly preoccupied with knowledge systems. *Sociologia Ruralis* 25

Röling, N (1988) *Extension science*. Cambridge, UK: Cambridge University Press

Röling, N and Engel, PGH (1992) The development of the concept of Agricultural Knowledge Information Systems (AKIS): Implications for extension. In Rivera, WM and Gustafson, DJ (eds) *Agricultural extension: Worldwide institutional evolution and forces for change*. Amsterdam, the Netherlands: Elsevier Science Publishers

Sagasti, FR (2004) *Knowledge and innovation for development : the Sisyphus challenge of the 21st century*. Cheltenham: E. Elgar

Schultz, TW (1964) *Transforming traditional agriculture*. New Haven ; London: Yale University Press

Schumacher, EF (1973) *Small is beautiful : a study of economics as if people mattered*. London: Blond and Briggs

Schumpeter, JA (1934) *The Theory of Economic Development*. Cambridge: Harvard University Press (New York: Oxford University Press, 1961)

Schumpeter, JA (1944) *Capitalism, socialism, and democracy*. London: Allen & Unwin

- Schumpeter, JA and Opie, R (1961) *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*. New York: Oxford University Press
- Society, TS (2008) <http://www.smallisbeautiful.org/>.
- Spielman, DJ (2005) Innovation Systems Perspectives on Developing-Country Agriculture: A Critical Review. *ISNAR Discussion Paper*. International Food Policy Research Institute
- UNDP (2004) *Unleashing Entrepreneurship: Making Business Work for the Poor*. New York: United Nations Development Programme
- Wennekers, S and Thurik, R (1999) Linking entrepreneurship and economic growth. *Small Business Economics* 13: 27-55

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